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I may remark that there is no use in forcing an agreement with Lacaille's position-angle (at all events within 5° or so), as I find that a change of 3′ in the difference of Declination of the components changes the position-angle more than 5°; and considering the small number of observations on which Lacaille's places depend, the quantity mentioned above is probably well within the limits of error. Brisbane's position-angle appears to be erroneous. The agreement in the other cases is close, and I see no evidence that a period differing much from 76·222 years is required to satisfy the observations.

Note on Prof. Pritchard's Comparison of the Light Transmitted by Refracting and Reflecting Telescopes. By W. S. Franks.

There are a few points in Prof. Pritchard's remarks, at the last meeting of the Society, that I should like to see cleared up. At the outset he seems to infer that nothing has been done in the way of careful comparison, between reflectors and refractors, since the time of Dr. Robinson, on whose results he depends largely.

Possibly no photometric comparison had been previously attempted; but, certainly, careful eye-estimates have been made by various observers of the relative light-ratio of the two classes of telescopes, mounted side by side, and directed upon identical objects, the results being published in some of the scientific journals. A cursory inspection of the last twenty volumes of the *English Mechanic* will afford ample evidence in support of this statement.

Dr. Robinson's conditions may be very well so far as they go, but they do not go far enough. Two very important points are ignored—the relative foci of the telescopes, and their magnifying powers. Now I note that Prof. Pritchard stated, in answer to Mr. Rand Capron (*Observatory* report) that the focal lengths of the O.G. and mirrors were the same. This, surely, is a slip, for, according to the best of my knowledge, the particulars are as follows:—

		Aperture.	Focus.
a	Grubb refractor	$12\frac{1}{5}$ inches.	15 feet.
b	De la Rue reflector	13 "	10 "
c	With reflector	13 "	9 " (?)

(The last I am not certain of, but have given the usual focus of Mr. With's 13-in. specula.)

Therefore, the angles of convergence between 15 feet and 9 or 10 feet focus will be widely different. From this it follows that to get equivalent magnifying powers we must use very different eyepieces; and the eyepiece on the refractor would be

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formed with lenses of shallower curves, consequently thinner and more transparent, than would be possible with the eyepiece producing an equal amplification on the reflector.

Such comparisons, however carefully made, possess but little value unless the following conditions be attended to—1. The foci must be identical, and the angles of convergence therefore similar; 2, the *same* eyepiece must be alternately used on each instrument, for even eyepieces are not infallible; 3, the instruments must be placed side by side, under precisely similar atmospheric conditions, and directed on the same object; 4, the observer, it is scarcely necessary to add, must be the same. I cannot allow that these conditions were rigidly fulfilled in Prof. Pritchard's comparison. Moreover, I do not consider the principle of extinction by a coloured wedge at all applicable in settling this vexed question. I have tested this on some double stars, and was rather astonished to find such a difference between the relative magnitudes of the components, as seen with the wedge and without it. But if a wedge be used, the stars selected should be *white*. Out of Prof. Pritchard's list only *two* are really white stars, the rest being more or less coloured. [There is one star I fail to recognise, *g Pegasi*, but, as it is a star of 2·5 mag., perhaps Prof. Pritchard will give its better known Bayer synonym.].

I am aware that Prof. Pritchard states that "he had not entered upon the general question of comparing achromatic object-glasses with mirrors," although, at the same time, he admits that the particular telescopes used "may be regarded as representative instruments." Nevertheless, I do not see how he can escape the logical conclusion that the general is involved in the particular. In all these comparisons I have spoken of the telescopes were regarded as complete instruments, not merely as separate object-glasses or specula. If the latter were the case, we should have also to consider another factor—the secondary mirror or prism used with all reflectors, save the Herschelian. But most practical observers wish to know the ultimate effect of their telescopes as such, caring less about the theoretical difference between O.G. and mirror *per se.* And, evidently, in comparing two telescopes together, it is not fair to use a different eyepiece on each; for how are we to distinguish between effects due to the O.G. or mirror from those produced by the eyepiece alone?

Another statement, on p. 31, *Monthly Notices*, I must take exception to. It is there stated that "it has long been known that the reflective power of silver exceeds that of speculum metal, and this also no doubt is the case (though possibly not to an equal extent) with chemically deposited silver on glass." I now refer to the sentence used parenthetically. The deposit of silver on glass is chemically *pure*, and, with a dense film, takes a perfectly black polish, capable of the highest reflective power; whilst ordinary silver is always alloyed, and, though increasing

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in hardness, its reflective properties are thereby somewhat impaired. In connection with this, I may call attention to a statement by Mr. De la Rue, in the discussion which followed the reading of the paper, to the effect that "speculum metal reflects more actinic rays than silver on glass." If this be so, how is it that speculum metal mirrors impart a distinctly *redder* tone to the image than silver on glass?

Much as I would welcome any addition to our knowledge on the interesting, though controversial, subject of the light-ratio between reflectors and refractors, I am afraid we are doomed to wait a little longer before the question shall be finally set at rest.

Leicester:
1884, *Dec.* 13.

Observations of Stars occulted by the Moon during the Eclipse of Oct. 4, 1884, *made at Clapham.* By Edmund J. Spitta.

General Observations.—The sky was cloudless, but owing to the glare of the Moon no stars before No. 74 of the Pulkova list could be recognised with the 10-inch Calver Reflector, power 60. During totality the Moon was, generally speaking, exceedingly faint—indeed, at times barely visible to the naked eye—and presented none of the coppery colour usual on these occasions. It was bluish at the lower edge as seen in the inverting telescope about 10 o'clock, when the other portion seemed brighter than at any time. No markings were plain enough to be recognised.

An assistant called half seconds by the chronometer, time being observed an hour previous, and the observation reduced for collimation and azimuth errors, &c. G.M.T. was obtained by allowing 33 sec. W., taken from the 6-inch Ordnance chart. Owing to the observations being taken without a chronograph, no attempt was made for closer notation of the contacts; indeed, the nature of the phenomena does not seem to permit of greater accuracy—hence the similitude of the decimals in the corrected times.

Star. Pulk. List.	Mag.	G.M.T. Disappearance.	G.M.T. Reappearance.
74	9·3		9 50 4·83
76	10	9 16 52·83	
81	9·5	9 33 33·83	10 38 7·83
82	10	Observed, but badly noted.	10 15 52·83